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EXAMINER	
HODGE, ROBERT W	

ART UNIT	PAPER NUMBER
1729	

NOTIFICATION DATE	DELIVERY MODE
06/09/2011	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATDOCTC@fr.com

Office Action Summary	Application No.	Applicant(s)	
	10/664,405	DRAKE ET AL.	
	Examiner	Art Unit	
	ROBERT HODGE	1729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 May 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 14-22* is/are pending in the application.

4a) Of the above claim(s) *2-7 and 18-22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,8-12 and 14-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/4/11 has been entered.

Response to Arguments

Applicant's arguments, see Remarks, filed 5/4/11, with respect to the rejections of claims 1 and 8-11 under 35 U.S.C. 112, second paragraph and under 35 U.S.C. 102(b) as being anticipated by Lindbeck have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of 35 U.S.C. 112, first and second paragraph.

The remainder of applicant's arguments filed 5/4/11 have been fully considered but they are not persuasive. Applicants argue the amendments to the claims which will be addressed in the grounds of rejection below. Applicants reiterative remarks regarding the intended use, the functional recitations and the material worked upon, are still not persuasive for the many reasons already made of record.

Regarding the Delaney reference applicants have completely misconstrued the reference. It is noted that the secondary reference is used as a teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, In re Nievelt, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), In re Keller 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept and in combination with the primary reference, the presently claimed invention is disclosed. As was previously stated “Delaney teaches that hydrocarbon direct fuel cells use methanol, ethanol, diesel and/or gasoline as fuel (paragraph [0033])”.

Regarding the Yonetsu reference applicants state that “the cartridge recited in Applicant’s claims is a separate entity from a fuel cell”. Said argument is not commensurate with the scope of the claims and also contradicts the intended use recitation that applicants have added to the preamble of amended claim 12. There is nothing in the claims that prohibits the cartridge from being in the same unit as the fuel cell and applicants have chosen to use open claim language and therefore more can be present in the prior art and still read on the claims as recited. Applicants also state that Yonetsu teaches away from a heating element. This statement is not well take because it is quite clear that Yonetsu teaches a "vaporization plate" which applicants have admitted to, the purpose of said vaporization plate is to heat the fuel to cause it to vaporize, so therefore the combination as provided does not teach away as applicants submit.

The obviousness-type double patenting as being unpatentable over claims 11 and 12 of copending Application No. 10/664,818 (now U.S. Patent No. 7,935,457) is withdrawn herewith.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 8-11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a specific interconnect to attach a fuel cartridge to a portable powered electronic device that contains a fuel cell, does not reasonably provide enablement for an "egress port configured to attach to a fuel cell". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. As recited in the claims the egress port is attached to a fuel cell, however the instant specification does not discuss this feature. In fact the instant specification only discusses connecting the egress port to a specific interconnect (for example as shown in figure 8), but it does not provide enablement for the egress port being connected to a fuel cell. Furthermore as recited instant claim 1 recites that the egress port can be connected to any fuel cell at any location which is also not enabled by the instant specification.

Claims 12 and 14-17 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a specific interconnect to attach a fuel cartridge to a portable powered electronic device that contains a fuel cell, does not reasonably provide enablement for "a fuel cartridge, configured to deliver an oxidizable vapor to a fuel cell". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. As recited in the claims the cartridge is configured to deliver an oxidizable vapor to a fuel cell, however the instant specification does not discuss this feature. In fact the instant specification only discusses connecting the fuel cartridge to a specific interconnect (for example as shown in figure 8), but it does not provide enablement for the cartridge configured to deliver an oxidizable vapor to a fuel cell. Furthermore as recited instant claim 8 recites that the cartridge can be configured to deliver an oxidizable vapor to any fuel cell at any location which is also not enabled by the instant specification.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 8-12, and 14-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, recites "the cartridge having the fuel egress port configured to attach to a fuel cell". It is unclear how the fuel egress port is "configured" to attach to a fuel cell. What is the structural feature that configures the fuel egress port to be able to attach to

a fuel cell? Can the fuel egress port be attached to any fuel cell? How is the fuel egress port attached to the fuel cell? The Examiner has looked to the instant specification for guidance regarding the recitation of this configuration and has found no guidance. Therefore amended claim 1 and its dependent claims are indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12, recites "a fuel cartridge, configured to deliver an oxidizable vapor to a fuel cell". It is unclear how the fuel cartridge is "configured" to deliver an oxidizable vapor to a fuel cell. What is the structural feature that configures the fuel cartridge to be able to deliver an oxidizable vapor to a fuel cell? Can the fuel cartridge deliver an oxidizable vapor to any fuel cell? How does the fuel cartridge deliver an oxidizable vapor to the fuel cell? The Examiner has looked to the instant specification for guidance regarding the recitation of this configuration and has found no guidance. Therefore amended claim 12 and its dependent claims are indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 further recites "the fuel that exists the housing as the vapor phase". It is unclear how the fuel "exists" the housing. It is clear that fuel can exist, but it is not clear how it "exists" the housing.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1 and 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,684,786 hereinafter Mann.

As seen in the figures 1, Mann teaches a fuel cartridge 12 comprising a housing 17, defining an interior space which confines liquid oxidizable fuel, a fuel egress port 22 or 40 supported by the housing, which provides egress of fuel from the interior space of the housing to an external space of the housing (i.e. the fuel exits the housing), and a resistive heating element 26 or 70 disposed in the fuel egress port, wherein the resistive heating element is a wire that is disposed in thermal communication with the interior of the cartridge and it spaces a vapor portion of the cartridge (i.e. head space) (whole document).

Regarding the recitations in claims 1 and 8 that recite the function of the apparatus and the material worked upon by the apparatus or how the apparatus is intended to be used. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Furthermore because all of the instantly claimed structure has been found in Mann, the apparatus of Mann is full capable of the functional and intended use recitations in the instant claims. The recitations in claims 1 and 8 reciting the function of the apparatus and the material worked upon by the apparatus or how the apparatus is intended to be used are not given patentable weight. Applicants are again directed MPEP 2114, 2115 for guidance regarding said recitations, which are cited below:

APPARATUS CLAIMS MUST BE STRUCTUR-ALLY DISTINGUISHABLE FROM THE PRIOR ART

>While features of an apparatus may be recited either structurally or functionally, claims< directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. >*In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971);< *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).

MANNER OF OPERATING THE DEVICE DOES NOT DIFFERENTIATE APPARATUS CLAIM FROM THE PRIOR ART

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987) (The preamble of claim 1 recited that the apparatus was "for mixing flowing developer material" and the body of the claim recited "means for mixing ..., said mixing means being stationary and completely submerged in the developer material". The claim was rejected over a reference which taught all the structural limitations of the claim for the intended use of mixing flowing developer. However, the mixer was only partially submerged in the developer material. The Board held that the amount of submersion is immaterial to the structure of the mixer and thus the claim was properly rejected.).

"Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim." *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Furthermore, "[i]nclusion of material or article worked upon by a structure being claimed does not impart patentability to the claims." *In re Young*, 75 F.2d *>996<, 25 USPQ 69 (CCPA 1935) (as restated in *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963)).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1 and 8-11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mann as applied above, and further in view of U.S. Pre-Grant Publication No. 2005/0031522 hereinafter Delaney.

Assuming *arguendo* that patentable weight is given to the intended use, the functional language and the material worked upon in claims 1 and 8, Mann teaches that the liquid fuel in the fuel cartridge can be a hydrocarbon such as diesel (see citations above).

Delaney teaches that hydrocarbon direct fuel cells use methanol, ethanol, diesel and/or gasoline as fuel (paragraph [0033]).

Therefore it would have been obvious at the time of the invention to one having ordinary skill in the art to feed the diesel in a vapor phase from the fuel cartridge of Mann to a hydrocarbon direct fuel cell as taught by Delaney since the claimed subject matter merely combines familiar elements (feeding a hydrocarbon such as gasoline to a hydrocarbon direct fuel cell that uses gasoline as a fuel) according to known methods and does no more than yield predictable results. See MPEP 2141 (III) Rationale A, KSR v. Teleflex (Supreme Court 2007).

Claims 12, 14, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,506,513 hereinafter Yonetsu in view of GB 2 263 501 hereinafter Tsoi-Hei.

As seen in the figures, Yonetsu teaches a fuel cartridge, that is prismatic in shape, having a housing 1, a fuel egress port 3 that contains a heat producing element “a” (i.e. porous carbon vaporizing plate, Figure 2, column 13, lines 16-20), which is also in the interior of the cartridge (figures 13-14B) and spaces a vapor portion of the cartridge from a liquid reservoir of the cartridge, a bladder 16 (figure 7B) that holds a liquid fuel 7 such as methanol (column 5, lines 4-8) that is supplied to a direct methanol fuel cell 2 (column 2, line 34 – column 3, line 19, column 4, line 26 – column 5, line 35 and column 7, line 47 – column 7 line 62).

Furthermore in column 4, line 50 Yonetsu clearly discloses that the pathway 3 is filled with a porous material through which the liquid fuel permeates (also called a fine tube that performs capillary function as admitted to by Applicants in the Remarks field 11/4/09) and the porous material is in fluid communication and fluidly connected to the liquid fuel holding material called a receiver 5, where the fuel is vaporized before entering the unit cell. Therefore the entire path that the fuel flows through before it is vaporized at the vaporization plate “a” is considered the “egress port” and since the receiver 5 is completely disposed on the vaporization plate "a" the vaporization plate "a" is disposed in the path of the fuel being supplied and is therefore "disposed in the fuel egress port" as recited in instant claim 1.

Yonetsu further teaches in figure 7A a piston 30 (i.e. fuel sealing part) urged against the fuel via spring 14 (column 7, lines 48-62).

Yonetsu does not teach the piston and the bladder in the same embodiment.

At the time of the invention it would have been obvious to one having ordinary skill in the art to combine the embodiments of figures 7A and 7B of Yonetsu in order to provide a fuel cartridge with multiple solutions for properly containing the methanol fuel as well as providing sufficient means to push out the fuel through the fuel outlet port thereby providing the necessary fuel to the fuel cell in order for the fuel cell to operate. The above combination such as a piston urged against a bladder, according to known methods by Yonetsu yields the predictable result of providing a sufficient means to push out the fuel through the fuel outlet port thereby providing the necessary fuel to the fuel cell in order for the fuel cell to operate. See MPEP 2141 (III) Rationale A, KSR v. Teleflex (Supreme Court 2007). See also Boston Scientific Inc. v. Cordis Corp. (Fed. Cir. 2009) 89 USPQ2d 1704.

Yonetsu does not teach that the porous carbon vaporization plate is a resistive heating element.

Tsoi-Hei teaches a porous carbon heating element 22 (i.e. resistive heating element) that is connected to two electrodes 18a and 18b, which supply the porous carbon heating element electrical current that causes the porous carbon heating element to produce heat and to vaporize liquid fuel that is supplied to the porous carbon heating element (page 4, line 26 – page 5, line 6 and page 6, lines 6-30).

At the time of the invention it would have been obvious to one having ordinary skill in the art to use a porous carbon heating element in place of the porous carbon vaporization plate in Yonetsu as taught by Tsoi-Hei in order to provide a vaporizer that provides a well prepared charge, stores a minimal amount of fuel, permits accurate fuel

metering and that minimizes the effect of wall wetting, thereby enabling a completely vaporized fuel stream to the fuel cell that is subsequently preheated that will not lower the temperature of the fuel cell when it is supplied to the fuel cell such that the fuel cell will operate at its optimal operating temperature. Simple substitution of one known element (a porous carbon heating element) for another (a porous carbon vaporizing plate) would achieve the predictable results of providing a vaporizer provides a well prepared charge, stores a minimal amount of fuel, permits accurate fuel metering and that minimizes the effect of wall wetting, thereby enabling a completely vaporized fuel stream to the fuel cell that is subsequently preheated that will not lower the temperature of the fuel cell when it is supplied to the fuel cell such that the fuel cell will operate at its optimal operating temperature. See MPEP 2141 (III) Rationale B, KSR v. Teleflex (Supreme Court 2007).

With regards to the preamble limitation “configured to deliver an oxidizable vapor to a fuel cell", said recitation is not given patentable weight because it merely recites the intended use of the instantly claimed invention. If the body of a claim fully and intrinsically sets forth all of the limitations of the claimed invention, and the preamble merely states, for example, the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention’s limitations, then the preamble is not considered a limitation and is of no significance to claim construction. Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1305, 51 USPQ2d 1161, 1165 (Fed. Cir. 1999). See also Rowe v. Dror, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997) (“where a patentee defines a structurally complete invention in the claim body

and uses the preamble only to state a purpose or intended use for the invention, the preamble is not a claim limitation"); Kropa v. Robie, 187 F.2d at 152, 88 USPQ2d at 480-81, See MPEP 2111.02.

Regarding the recitations in claim 12 that recite the function of the apparatus and the material worked upon by the apparatus or how the apparatus is intended to be used. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Furthermore because all of the instantly claimed structure has been found in Yonetsu as modified by Tsoi-Hei, the apparatus of Yonetsu as modified by Tsoi-Hei is full capable of functional and intended use recitations in the instant claims. The recitations in claim 12 reciting the function of the apparatus and the material worked upon by the apparatus or how the apparatus is intended to be used are not given patentable weight. Applicants are again directed MPEP 2114, 2115 for guidance regarding said recitations, which is cited above.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yonetsu in view of Tsoi-Hei as applied to claim 12 above, and further in view of Gore.

Yonetsu does not teach a battery to power the heat-producing element.

As seen in figures 2 and 2A-2C, Gore teaches a fuel cartridge 206 having a housing 230, a heat producing element (i.e. wire) 208, disposed in the cartridge and in thermal communication with the cartridge (paragraphs [0039]-[0051]). Gore further teaches powering the heat-producing element with a battery (paragraph [0031]).

At the time of the invention it would have been obvious to one having ordinary skill in the art to use a battery to power the heat-producing element in the fuel cartridge of Yonetsu as modified by Tsoi-Hei as taught by Gore in order to provide a system that can power the heat-producing element on demand when a sufficient electric load is not available from the fuel cell such as at startup in order to vaporize the methanol in the cartridge before entering the anode of the direct methanol fuel cell of Yonetsu as modified by Tsoi-Hei especially during startup when the fuel cell is cold, so that the rate of reaction can be accelerated in the direct methanol fuel cell of Yonetsu as modified by Tsoi-Hei thus increasing the overall efficiency of the cartridge and fuel cell system of Yonetsu as modified by Tsoi-Hei. If a technique has been used to improve one device (using a battery to power the heat-producing element in a fuel cartridge), and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way (providing a system that can power the heat-producing element on demand when a sufficient electric load is not available from the fuel cell such as at startup in order to vaporize the methanol in the cartridge before entering the anode of the direct methanol fuel cell especially during startup when the fuel cell is cold so that the rate of reaction can be accelerated in the direct methanol fuel cell thus increasing the overall efficiency of the cartridge and fuel cell system), using the technique is obvious unless its actual application is beyond his or her skill. See MPEP 2141 (III) Rationale C, KSR v. Teleflex (Supreme Court 2007).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT HODGE whose telephone number is (571)272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on (571) 272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert Hodge/
Primary Examiner, Art Unit 1729